

# **TRIP INTERVIEW PROGRAM (TIP)**

## **Sampling Design, Summary Statistics and Recent Trends**

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### **Overview**

Estimates of the age distribution of fish in the population and how the distribution has changed over time is critical information for the assessment of the population. To estimate the age distribution, the Southeast Fisheries Science Center has developed the Trip Interview Program (TIP). Like many of the other SEFSC statistics gathering programs, this one is also a joint or cooperative effort with the state fishery agencies in the Southeast Region and the Territorial agencies in the U.S. Caribbean.

The Trip Interview Program provides: size frequency data, age at length data, catch per unit effort data, and information on the composition of the species being caught and landed. The collection of data for this program is conducted by port agents located in coastal areas in the South Atlantic and Gulf of Mexico. These field biologists visit docks and fish houses to interview the fishermen and take length and weight samples from their catch. For some trips, the port agents are at the location when the fish are being unloaded and can measure and weigh individual fish as they are being unloaded. At other times, the fish have already been unloaded and the port agent is given permission to measure and weigh a sample of the catch from the storage containers at the fish houses.

The Trip Interview Program (TIP) was developed by the Southeast Fisheries Science Center (SEFSC) as a shore-based sampling program. The primary focus of the TIP is the collection of random size-frequency data and biological samples from commercial marine fisheries. Biological samples include age, reproductive, prey, and genetic data. In addition to collecting biological data, the TIP serves as a quality assurance on catch and effort data. It validates species composition of catch and type and quantity of gear through first hand, trained observation. Other important information, obtained through personal interviews with the fishermen and dealers, also serves the quality assurance purpose. The TIP is a major component of the Atlantic Coastal Cooperative Statistics Program (ACCSP) in the southeastern U.S. Atlantic coastal region and the Commercial Fisheries Information Network (COMFIN) in the U.S. Gulf of Mexico coastal region. It also collects data from Puerto Rico and the U.S. Virgin Islands.

This report will both briefly summarize Statistical data collected by the TIP, explain program sampling design, and attempt to provide examples of representativeness of TIP sampling in regards to area, species, gear and other factors. The TIP generally confines sampling to species for which length and/or age structure sampling is important for assessment and does not usually sample shrimp and menhaden for this reason. Further, federal TIP samplers concentrate on those species federally-managed. All data presented in this report is filtered such that it represents collections of Federally-managed species for which biosampling is important.

## Data Summary

Data collected by TIP were summarized for the last five years (2008-2012). Table 1 shows an overview of numbers of samplers, trips interviewed, and samples (length and otolith) by region. The proportion of these data which represents collection by field staff employed by the SEFSC is also shown. Note that TIP collection in the Caribbean are completely carried out by field staff employed the Territorial Fisheries agencies of Puerto Rico and the U.S. Virgin Islands. In the Gulf of Mexico and South Atlantic, roughly half of the samplers are Federal staff; however they account for less than half of the interviews and lengths, but more than half of the otoliths. The disparity can be accounted for the multiple duties beyond TIP sampling assigned to federal field staff, but an emphasis on otolith collection when sampling

Table 1. Total TIP Interviews, Lengths, and Otoliths by Region, 1983-2012.									
(Number of samplers is a yearly average)									
Region	Number of samplers		Trips Interviewed		Lengths Collected		Otoliths Collected		
	Total	% Federal	Total	% Federal	Total	% Federal	Total	% Federal	
Gulf of Mexico	22	50%	55,193	41%	2,638,953	36%	467,788	65%	
South Atlantic	9	44%	47,718	37%	1,936,257	36%	155,870	64%	
Caribbean	7	0%	28,637	0%	902,240	0%	918	0%	

does occur.

Table 2 shows sampling fraction (portion of sampled weight to total landing weight) by state and year for federally managed species. Sampling fractions are not usually substantially different from year to year within a state, but are often very different between states. An exception is 2012 data for FL, AL, MS, LA, and TX, where the availability of additional funding allowed for the deployment of more field samplers.

Table 2. Fraction of sampled weight (converted from sampled length where weights not taken) in total landed weight													
YEAR	NC	SC	GA	FL	AL	MS	LA	TX	PR	VI			
2008	0.02	0.05	0	0.01	0.01	0.01	0.02	0.01	0.02	0			
2009	0.02	0.06	0	0.01	0.02	0.01	0.3	0.01	0.02	0.01			
2010	0.02	0.03	0	0.01	0.01	0.01	0.04	0	0.02	0.02			
2011	0.02	0.02	0	0.01	0.01	0.01	0.06	0	0.01	0.02			
2012	0.02	0.08	0	0.02	0.02	0.04	0.09	0.03	0.01	0.02			

## Sampling Design

In general, the sampling design of TIP is to sample proportionally to commercial landings in any given strata (gear type, area fished/landed, species caught, etc.). In the simplest terms, this should mean that if longline trips represent 10% of the total commercial trips taken in a time/area stratum, then 10% of the trips sampled by TIP in that stratum should be longline trips; and if 50% of the catch from longline trips in that stratum are made up of red grouper, then 50% of the length and age samples should come from red grouper. While simple in theory, the combinations of time, area, gear, and species in any of the three SEFSC management areas (Gulf of Mexico, South Atlantic, and Caribbean) make complete attainment of the design problematic, especially considering limitations of real-time information on catch and effort as well as logistical issues with sampling personnel.

In the attempt to adhere to the sampling design, the SEFSC relies upon a combination of Federal and State Samplers (often referred to as “Port Agents”) which are strategically placed in areas of high landings of federally managed species, at least in the case of Federal Port Agents. State Port Agents may be placed in areas where landings are primarily State-managed species. Port Agents are expected to become intimately familiar with the patterns of commercial fishing catch and effort within their areas of responsibility, and therefore be able to generally implement the TIP sampling design. In practice, however, a variety of factors may hinder this:

- 1) Size of the area of responsibility-generally Port Agents are assigned a territory consisting of one or more Counties, or in certain cases only a portion of a single county). The size of these territories may be as small as a single or partial county where landings are concentrated, to as many as eight coastal counties where the drive from one end of the area to the other would take as much as four hours. In these cases, it may be difficult for the Port Agents to be completely familiar with what is happening in all the ports in the area, and may be impractical to sample some landings even if they were aware the landings were occurring.
- 2) Scope of Port agent responsibility- Port Agents have other duties besides TIP sampling, including Gulf Shrimp System data collection, quota monitoring, trip ticket quality control, outreach, and a variety of other assorted tasks. While some of these tasks can be completed during periods when the weather or other factors prevent fishing activity, occasionally these other duties will prevent TIP sampling.
- 3) Awareness of landings-in the Gulf of Mexico, Port Agents are given 3 hour advance notification of vessel landings for IFQ species, but this does not assist in identification of non-IFQ (e.g. spiny lobster, king mackerel) trips. An additional method used in all areas is to forge cooperative relationships with dealers and fishermen so as to be able to contact them to know of vessel landings a day or so in advance. Cooperation is highly variable. A third tactic is to randomly visit commercial docks on days when the agent guesses vessels may be arriving. This tactic can be relatively effective for Port Agents with small territories, but can be very inefficient when drive times to visit the ports are significant.
- 4) Limitations of personnel- in many cases, Port Agents work singly within a territory; there is no “back up” in case of sick leave, vacation time, etc. Scheduled time off is usually timed to

coincide with periods of fishery inactivity, but inevitably unscheduled leave can impact sampling activities.

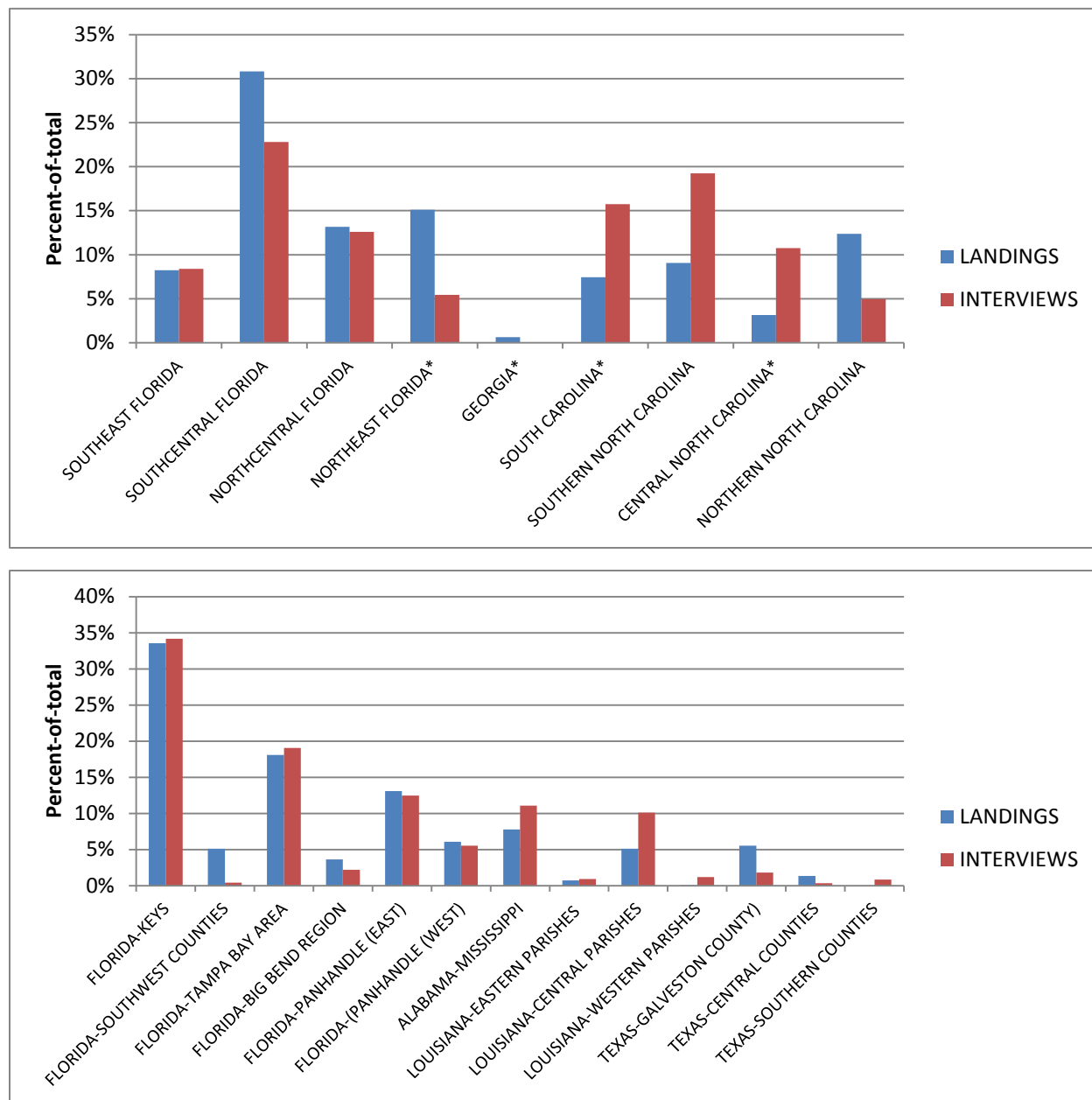
The following sections will describe in relatively broad terms representativeness of sampling proportional to landings in recent TIP data (2008-2012). In particular it will focus on first stage sampling, the proportion of trips or samples (length or age) from different areas, gear types, species, trip size, etc. A brief examination and discussion of the representativeness of second stage sampling (within trip selection of individuals to sample) will follow. It should be noted that although a species, area, or gear type may appear to be over or under represented, actual analyses of if biosampling is adequate to support stock assessment for any given species in a region is not a subject of this report.

#### a. Trips by Area

Figure 1 shows landings compared to TIP trips sampled by Port Agent area of responsibility aggregated for 2008-2012. The Caribbean is not shown because the sampling there is directed by Territorial Agencies and the SEFSC is not aware of area assignments to sampling staff. Even in some continental locations, sampling is solely conducted by State Port agents but the number and distribution is unknown to the SEFSC; these areas are marked with an asterisk.

In general the proportion of the interviews is similar to that of landings in the Gulf of Mexico region, but the South Atlantic shows some deviations. Areas shown are in general the area of a single port agent; this is important as oversampling in one area cannot be reallocated to an area that is under sampled.

Figure 1. Landings vs. TIP Interviews by single sampler area, 2008-2012, for the South Atlantic (top) and Gulf of Mexico (bottom) regions



#### b. Length Samples by Gear Type

Figure 2 shows landings compared to length samples in TIP by major gear class, aggregated for 2008-2012. Length samples were chosen over age samples because for a significant gear type in the Gulf of Mexico region, traps and pots, the landings are substantial for spiny lobster and no age structures are collected. Further, no otoliths are collected in the Caribbean. To a lesser extent, entangling nets are an

important gear type for the capture of king mackerel, which are generally landed in a form that prevents sex identification which precludes the collection of age structures for this species.

The proportion of samples by gear generally is similar to the landings. The similarity of a greater amount of “unclassified” landings in proportion to “unclassified” samples in all three regions is explained by unclassified landings generally being the result of null values where the dealer or fishermen neglected to report gear type. Port Agents, however, are almost always able to link a gear type to their samples.

Figure 2. Proportions of length samples by major gear class, 2008-2012, for the Gulf of Mexico, South Atlantic, and Caribbean regions.

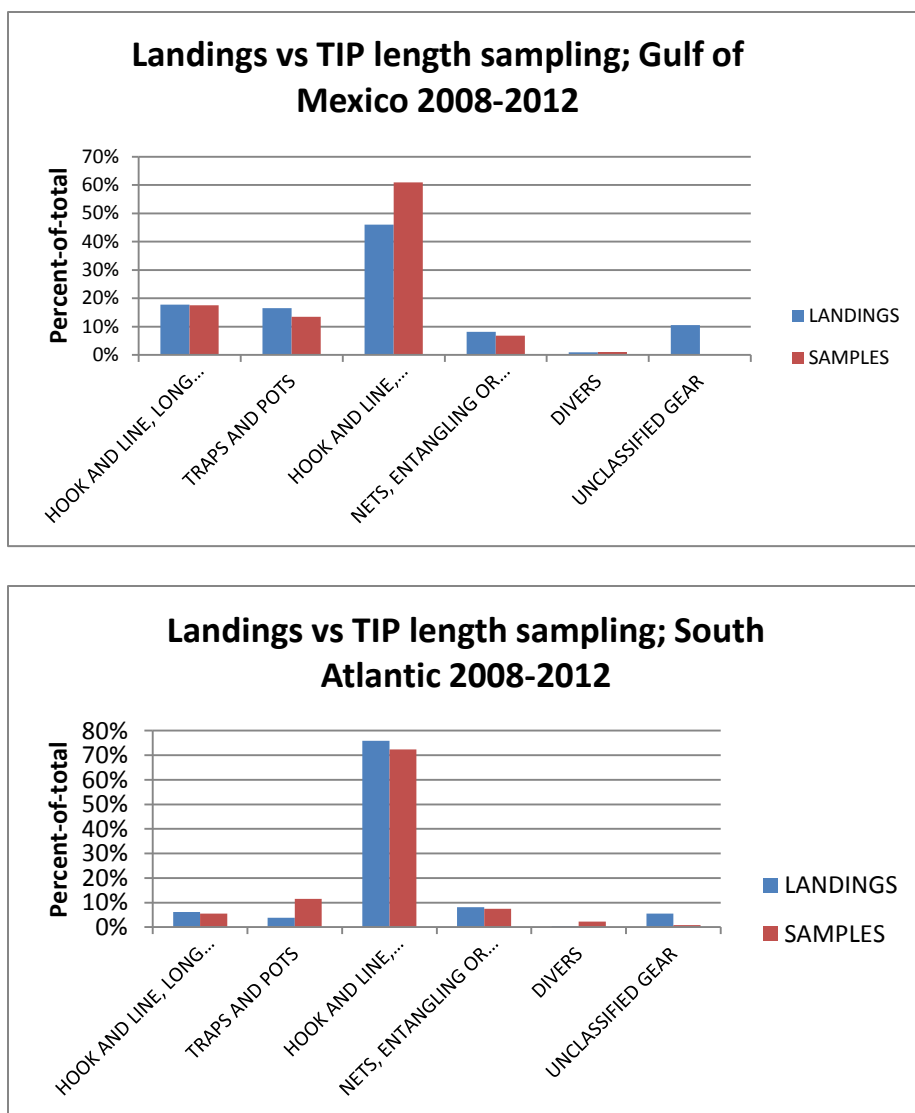
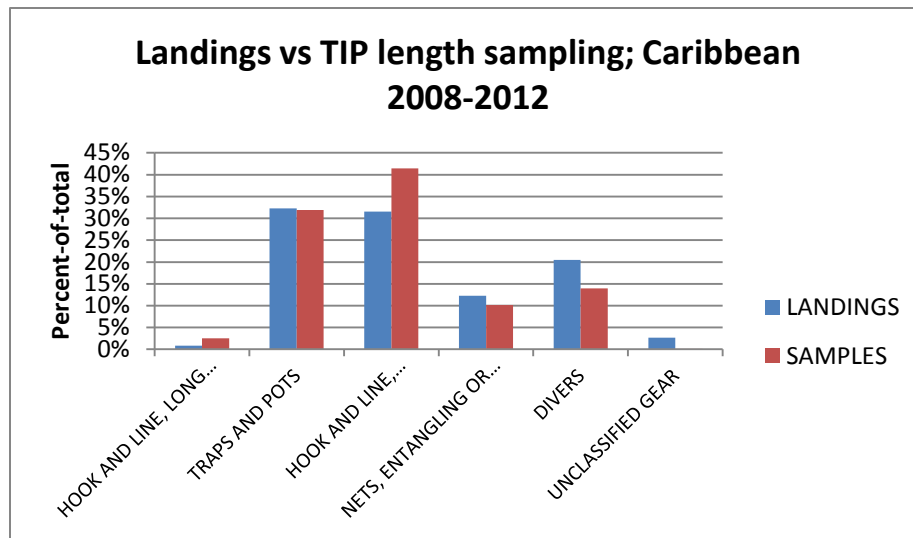


Figure 2 (continued).

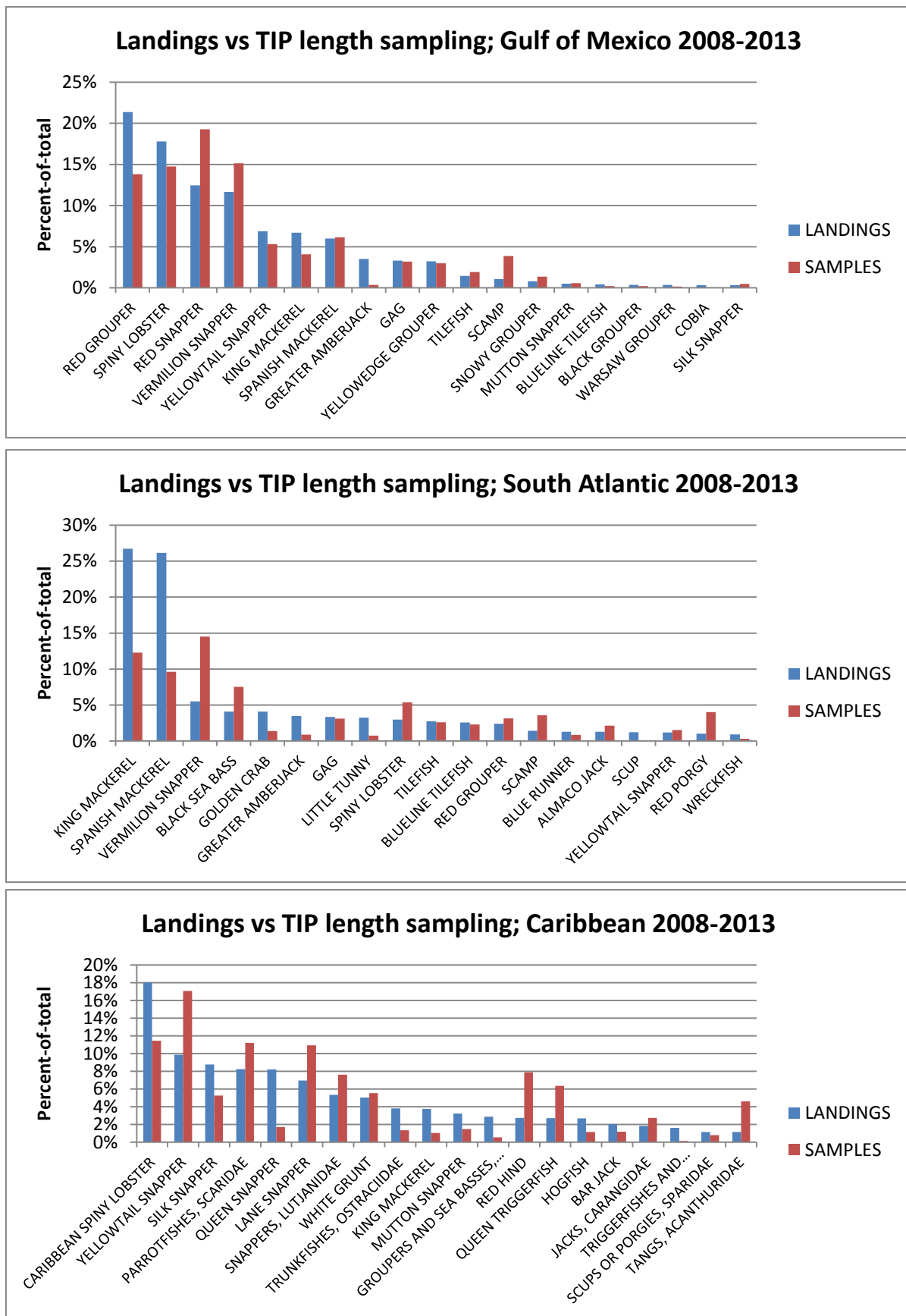


c. Length samples by species

Figure 3 shows landings compared to length samples in TIP by major species (or species groups in the Caribbean), aggregated for 2008-2012. Length samples were chosen over age sampling because for some significant species (e.g. spiny lobster, golden crab) age structures are not required for assessment and for other species (e.g. king mackerel) age structures are difficult to link to sex id which has been required by the age processing facility. Finally, age structures are not collected in the Caribbean.

In all areas there are some significant deviations from sampling proportional to landings. Some of this may be explained by sampling efficiency; in Continental operations samplers usually attempt to remove otoliths from all finfish during sampling operations but otolith removal is relatively easy for fish in the Lutjanidae and Serranidae families while much more difficult for the mackerels and jacks. Since samplers generally only have a limited amount of time of access to any given individual trip's catch, the amount of time needed to extract an age structure can have a significant impact on sampling proportion.

Figure 3. Proportions of length samples by species or species groups, 2008-2012, for the Gulf of Mexico, South Atlantic, and Caribbean regions.





d. Otolith/length samples by trip size.

Figures 4a, 4b, and 4c show the amounts of landings reported for different size class of trips (e.g. total amount landed in a single trip); and the amount of otolith samples collected (for the Gulf and South Atlantic) or length samples (for the Caribbean) for the same trip sizes. Examples charts are shows for two different gear types; vertical line (the major gear type in both the Gulf and South Atlantic) and traps (a major gear type in the Caribbean).

For vertical line in both continental regions, otolith samples are being drawn generally proportionally from the same size classes as the landings. However, in the Caribbean trap gear class, samplers seem to be conducting interviews with smaller industry participants disproportionately to trips with larger amounts of landings.

Figure 4a. Amount of landings (top) and otolith samples (bottom) from trips of different sizes in the vertical line gear class for the Gulf of Mexico region. Data is from 2008-2012 Fishery Logbook System (FLS) and TIP. Landings and samples are scaled as necessary. Trip size is binned in 500 pound increments.

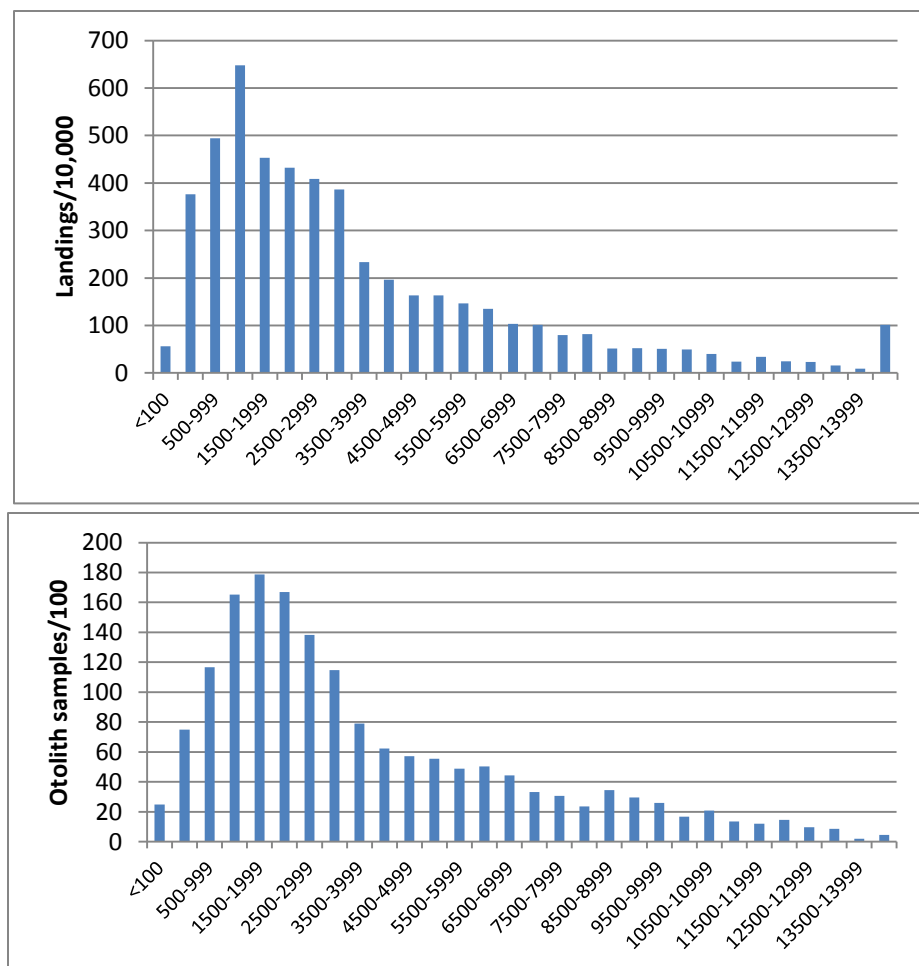


Figure 4b. Amount of landings (top) and otolith samples (bottom) from trips of different sizes in the vertical line gear class for the South Atlantic region. Data is from 2008-2012 Fishery Logbook System (FLS) and TIP. Landings and samples are scaled as necessary. Trip size is binned in 500 pound increments.

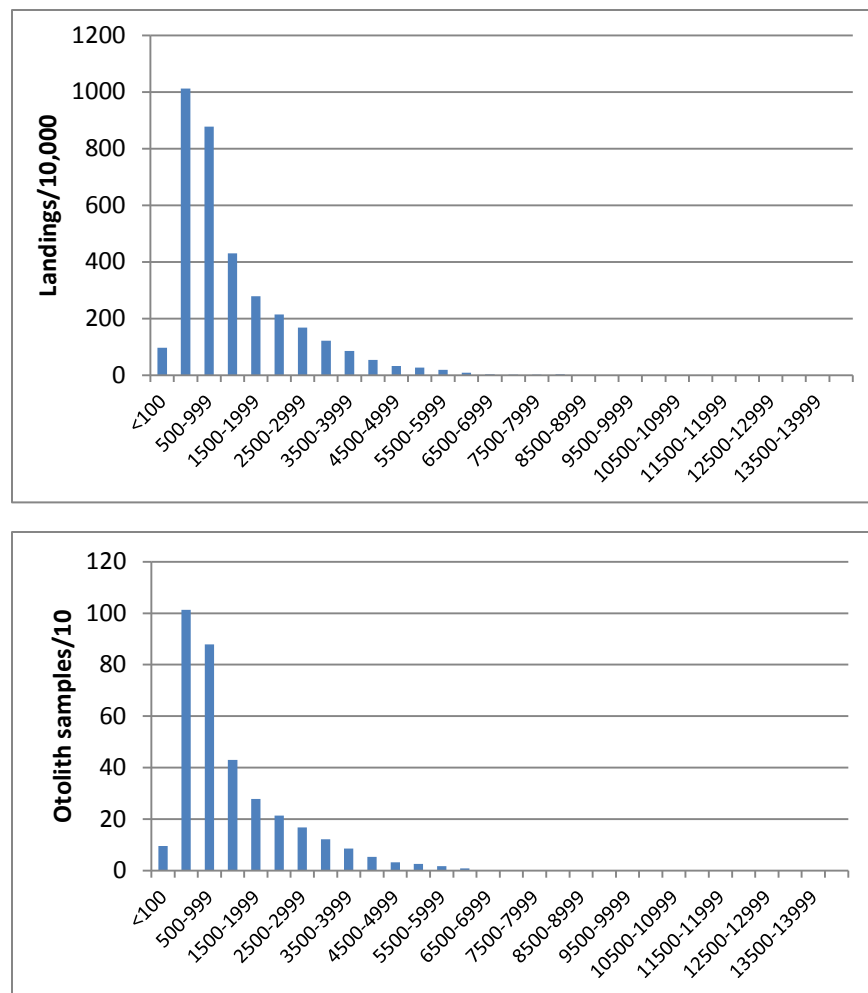
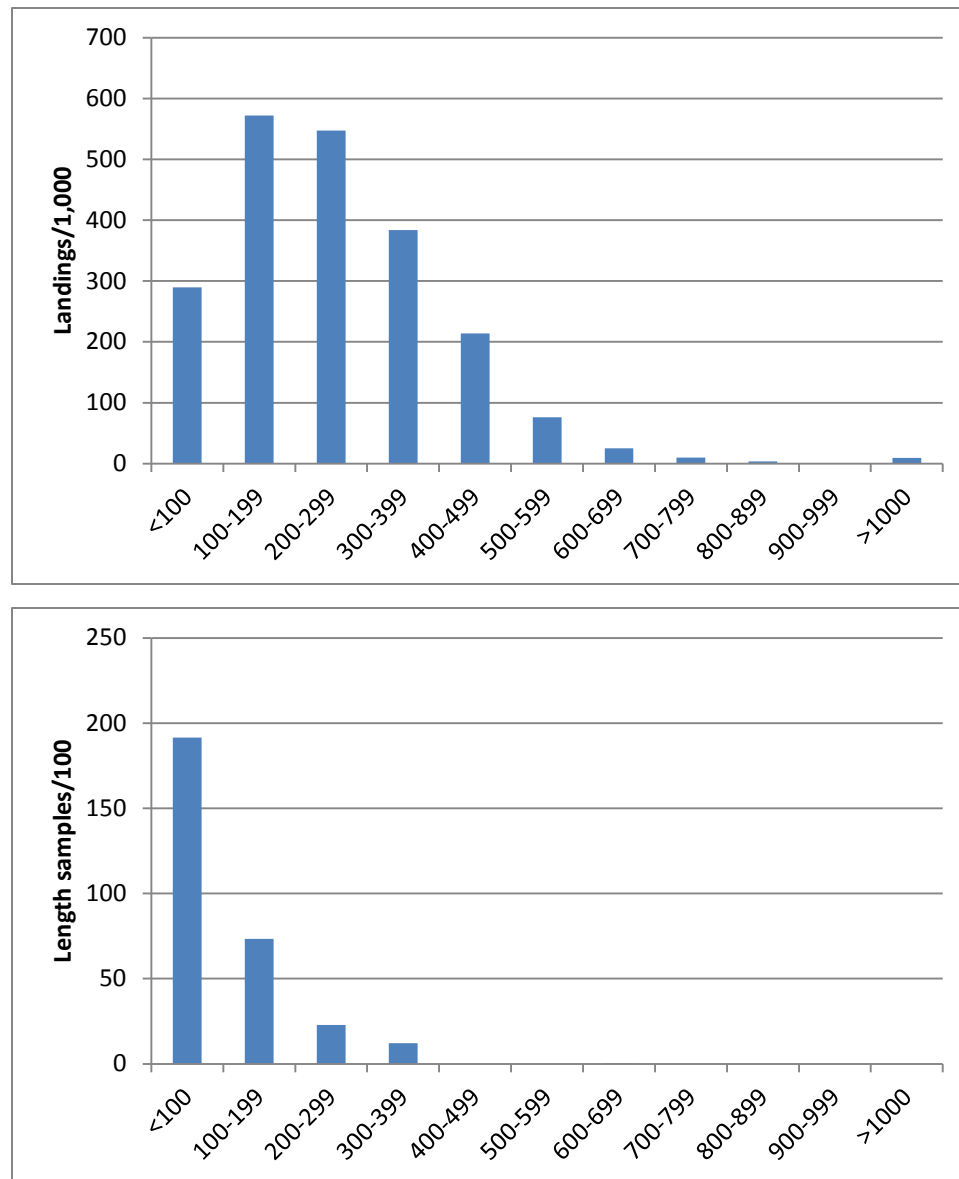


Figure 4c. Amount of landings (top) and length samples (bottom) from trips of different sizes in the trap gear class for the Caribbean region. Data is from 2008-2012 Accumulated Landings System (ALS) and TIP. Landings and samples are scaled as necessary. Trip size is binned in 100 pound increments.



#### Second stage sampling (within trip representativeness).

There have been several attempts to judge if the length samples collected during a port agent's TIP operations would be representative of that vessel's trip entire catch of those species. The first was the result of a contract with Virginia Institute of Marine Science (VIMS) which had the goal of not only examining if length samples were representative within a trip, but also if vessel or dealer selection (when a port agent could only get to a subset of the day's landings) was important. This project was

conducted in North Carolina in the King Mackerel fishery in 2009 and the Vermilion Snapper fishery in 2011. While small sample sizes hindered the project, in general the length frequencies collected by the research crew were grossly similar to those collected by the Port Agent. The results also suggested that vessel selection might be very important.

During the summer and fall of 2012, another evaluation study was begun, this time examining the red grouper catch in Madeira Beach, Florida, and the Vermilion Snapper catch in Destin/Ft. Walton Beach Florida. Unlike the VIMS study, this evaluation made no attempt to examine the importance of vessel/dealer sampling selection (first stage) but only attempted to collect data on second stage (individual fish) sampling. A total of 13 TIP interviews from vertical line trips and bottom longline trips for red grouper and 7 trips for vertical line vermilion snapper were sampled. Some selected length frequency plots from the red grouper trips are shown in figure 5. Data suggests that Port Samplers may have a tendency to select larger fish; however, full analysis of available data has not been conducted. Data collection efforts are expected to continue in the summer and fall of 2013.

Figure 5. Example length frequency plots of trips comparing lengths collected by port agent (AGNT, blue bars) and supplemental sampling staff (OBS, red bars) of red grouper. Bin size is 2 centimeter fork length increments. For vertical line trips, supplemental staff represent a near census of the red grouper catch for each trip while the port agent sampled roughly 20% of the catch; for longline trips those proportions were 25% sampled by supplemental staff and 5% sampled by port agent.

